



BIOSYNTHESIS OF METALLIC NANOPARTICLES USING FUNGI AND ITS APPLICATIONS

By

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Dedication

*I would like to dedicate this thesis to **the memory of my Father**, my mother, sister, brother, husband and my daughter. To everyone encouraged, supported me.*

All my love& appreciate for them, my Family.

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List of Abbreviations

Symbol	Abbreviation
AgNPs	Silver nanoparticles
AlNPs	Aluminum nanoparticles
ANOVA	Analysis of variance
C	Concentration of PNP at time (t)
CFU	Colony forming unit
Co	Initial concentration of PNP
Cr-NPs	Chromium nanoparticles
Cu-NPs	Copper nanoparticles
CVD	Chemical vapour deposition
Dox (Cz)	Dox (Czapek) Agar medium
DLS	Dynamic light scattering
EDX	Energy dispersive X-ray
EP	Extreme pressure
EPRI	Egyptian Petroleum Research Institute
fcc	face centered cubic
FeNPs	Iron nanoparticles
FTIR	Fourier Transform Infra-Red
HRC	Hardness
HRTEM	High Resolution Transmission electron microscope
IF	Inorganic fullerene
JCPDS	Joint Committee on Powder Diffraction Standards
L	Pin with lubricating grease only (control)
L1	Pin with lubricating grease + AgNPs
L2	Pin with lubricating grease + Cu-NPs
L3	Pin with lubricating grease + AlNPs
MEA	Malt extract agar medium
MIC	Minimal inhibitory concentration
mM	Milli molar
mv	Milli volt
NA	Nutrient Agar medium
nm	Nanometer = (10^{-9} m)
NPs	Nanoparticles
PCs	Phytochelatin
PDA	Potato dextrose agar medium

PNP	Para-nitro phenol
ppm	Part per million
PVD	Physical vapour deposition
RCMB	Regional Center of Mycology & Biotechnology
rpm	Round per minute
SEM	Scanning electron microscopy
SGA	Sabouraud Glucose Agar medium
SPR	Surface Plasmon Resonance
TEM	Transmission electron microscopy
UV-vis	Ultra violet visible spectroscopy
XRD	X-ray diffraction
Zn-NPs	Zinc nanoparticles
θ	Theta
μg	Micro gram